

WHAT IS CLAIMED IS:

1. A cellular phone equipped with a camera which can take a moving picture of a subject, the cellular phone with a built-in camera comprising

a lighting device for lighting a subject by means of a light-emitting diode,

a switching device for turning on said lighting device,

a light distribution lens for condensing light radiated from said lighting device, toward the subject, and

a transparent cover for protecting said light distribution lens, the transparent cover being disposed on a subject side, which is a front side, of said lighting device.

2. The cellular phone with a built-in camera according to claim 1, wherein said light distribution lens comprises a supporting member which is mounted to said lighting device and supports said light distribution lens.

3. The cellular phone with a built-in camera according to claim 1, wherein

said transparent cover has a convex lens portion formed to provide a condensing function of said light distribution lens.

4. The cellular phone with a built-in camera according to claim 2, wherein

said transparent cover has a convex lens portion having a condensing function, and

said light distribution lens is also provided.

5. The cellular phone with a built-in camera according to any one of claims 1 to 4, wherein

said transparent cover is formed as an integral part of a protection cover of a component for producing a visual effect on the user of said cellular phone with a built-in camera.

6. The cellular phone with a built-in camera according to claim 5, wherein

said transparent cover is formed as an integral part of a protection cover of a display device for displaying an image of said subject or an image received from a telephone of a party on the other end of the communication line.

7. The cellular phone with a built-in camera according to any one of claims 1 to 6, wherein

said lighting device is provided with a film-like member of which front-to-back optical transmittance is lower than back-to-front optical transmittance, on a subject side, which is a front side, of said light-emitting diode.

8. The cellular phone with a built-in camera according to any one of claims 1 to 6, wherein

said lighting device is provided with a component having a side orthogonal to light emitted from the light-emitting diode and allowing light emitted from the light emitting diode to pass through, and having an optical diffusion portion disposed on at least one said orthogonal side for diffusing light.

9. The cellular phone with a built-in camera according to claim 8, wherein

said lighting device is provided with an optical diffusion plate with an optical diffusion layer disposed on the subject side, in front of said light-emitting diode.

10. The cellular phone with a built-in camera according to claim 8, wherein

said lighting device is provided with an optical diffusion plate with an optical diffusion layer disposed on the side of the light-emitting diode, in front of said light-emitting diode.

11. The cellular phone with a built-in camera according to claim 10, wherein

said lighting device has an optical diffusion layer on the side of said light-emitting diode of said optical diffusion plate and on the side of the subject of said optical diffusion plate.

12. The cellular phone with a built-in camera according to any one of claims 9 to 11, wherein

said optical diffusion plate is formed in such a manner that an angle of light diffusion in a peripheral region becomes smaller than around an optical axis of a light-emitting diode.

13. The cellular phone with a built-in camera according to any one of claims 8 to 12, wherein

said optical diffusion layer of said optical diffusion plate has a rough surface.

14. The cellular phone with a built-in camera according to any one of claims 1 to 13, wherein

said lighting device has said light-emitting diode mounted directly on a printed circuit board.

15. The cellular phone with a built-in camera according to claim 14, wherein

said lighting device comprises a reflection portion having a highly reflective surface, at least around the light-emitting diode on a surface of a printed circuit board where said light-emitting diode is mounted.

16. The cellular phone with a built-in camera according to claim 15, wherein

said reflection portion is formed on said printed circuit board by printing.

17. The cellular phone with a built-in camera according to claim 15, wherein

said reflection portion is formed by fixing a film-like

member having a highly reflective surface to said printed circuit board.

18. The cellular phone with a built-in camera according to claim 15, wherein

said reflection portion is formed by fixing a structure which is shaped to enclose at least a part of a side wall of said light-emitting diode and has a highly reflective surface on the side of the subject, on said printed circuit board.

19. The cellular phone with a built-in camera according to claim 18, wherein

said structure of the reflection portion is formed with a resin of a highly reflective color such as white, yellow, silver or gold.

20. The cellular phone with a built-in camera according to claim 18, wherein

a surface of at least the subject side of said structure of the reflection portion is formed by coating in white, yellow, silver or gold, which is a highly reflective color.

21. The cellular phone with a built-in camera according to claim 18, wherein

said structure of the reflection portion has a surface formed of a metal film formed by evaporation or coating on at least on the side of the subject.

22. The cellular phone with a built-in camera according to any one of claims 15 to 21,

wherein a surface of said reflection portion on the side of the subject has concave-convex-shaped structures for diffusing light.

23. The cellular phone with a built-in camera according to any one of claims 1 to 22, further comprising

a light amount detection device which can detect that the amount of ambient light is insufficient; wherein

said switching device is switched, depending on the output of said light amount detection device.

24. The cellular phone with a built-in camera according to claim 23, wherein

said light amount detection device is said camera and detects the amount of light in accordance with a level of a reception signal of said camera.

25. The cellular phone with a built-in camera according to any one of claims 1 to 24, wherein

said lighting device is provided with a plug which allows an electrical and mechanical connection to said cellular phone with a built-in camera, and

the main unit of said cellular phone with a built-in camera has a jack to which said plug can be detachably connected.

26. A lighting system for use with a camera, having configuration of the lighting device in the cellular phone with a built-in camera according to any one of claims 1 to 24, and a plug which allows an electrical and mechanical connection with the jack of the lighting device in the cellular phone with a built-in camera according to claim 25.